

New forms of drug use: An overview

Una aproximación al panorama actual de las nuevas formas de consumo de drogas

MANUEL ISORNA FOLGAR*, FRANCISCO ARIAS HORCAJADAS**.

* Universidad de Vigo. Facultad Ciencias Educación y Trabajo social. Grupo PsiConBi, Ourense, España.

** Programa de Alcohol y Patología Dual. Hospital Doce de Octubre, Madrid, España.

Drug use is deeply rooted in Western ‘culture’ and its use is related to traditions, celebrations or leisure space. However, such use is not free of risks that depend on the amount, frequency and pattern of consumption, as well as the characteristics of the consumer such as age, sex and some health conditions. Despite mounting scientific evidence proving the toxicity of drugs, their supply and demand for them continues to grow, mainly due to the appearance or rediscovery of new psychoactive substances and the ‘attractiveness’ of new forms or patterns of use. Paradoxically, although concern aroused by these new consumption patterns is rising, very few studies have been carried out in Spain that analyze this issue.

While we know that adolescence is usually a time of searching and experimentation, and that many young people try substances without necessarily implying that they have an addiction problem, the available evidence points to the appearance of addictive behaviours at increasingly younger ages (Rial, Golpe, Barreiro, Gómez & Isorna, 2020). Although the latest Spanish national survey on drug use in secondary education (Encuesta Estatal sobre uso de Drogas en Enseñanza Secundaria, ESTUDES, 2021) shows that the consumption of all psychoactive substances in general is decreasing slightly, alcohol and cannabis use among the young Spanish population is higher than the

European average (ESPAD, 2019), and other forms of consumption such as electronic cigarettes (EC) continue to gain popularity. Our aim was therefore to review these new forms and patterns of use and their possible social health implications, especially for the youngest.

ALCOHOL

According to the ESTUDES survey (Plan Nacional sobre Drogas, 2021), 311,200 students (boys: 152,500, girls: 158,000) started drinking alcohol during the last year, a number slightly lower than that obtained in the two previous reports. In addition, approximately 6 out of 10 students drank alcohol in the last 30 days, and 40% of students said they got drunk in the last 12 months, while 23.2% did so in the last month, with more girls reporting getting drunk than boys, and 27.9% doing ‘binge drinking’, i.e., having five or more alcoholic beverages in an interval of approximately two hours. This phenomenon has been aggravated in recent years with the proliferation of macro-festivals (approximately 900 a year in Spain), which are mostly financed by the alcohol industry (Torres, 2020). It must be stressed that large amounts of alcohol are drunk before, during and after them, so much so that for this reason many festivals often use a variety of methods to prevent minors from drinking; an example is the use

Received: December 2021; Accepted: January 2022.

Send correspondence to:

Dr. Manuel Isorna Folgar. Universidad de Vigo. Facultad Ciencias Educación. Campus As Lagoas. 32004 Ourense.

E-mail: isorna.catoira@uvigo.es

of bracelets to differentiate between older and younger festival goers (Adán, 2018).

In addition to binge drinking, other new forms of consumption have emerged, mainly in an attempt to reduce the price of getting drunk as well as the time needed to reach drunkenness; most are imported from the UK and USA, and use other mucosal surfaces of the body than the digestive tract. We can highlight among them:

1. **Eyeballing**: this involves the direct application of alcohol on the ocular mucosa. The alcoholic effect thus achieved is probably low, but as this is generally practised after significant amounts of alcohol have already been drunk, users speak of a greater 'high'. This practice presents a high risk of serious corneal injuries with eventual blindness (Bersani et al., 2015).
2. **Alcohol without liquid** or AWOL: alcohol is ingested in nebulizer devices alongside oxygen, as in bronchodilator treatments. This presents a greater surface area for absorption and speed of action by bypassing the liver filter. This practice could give rise to or worsen pulmonary pathologies. In 2011, the Balearic Islands Public Health Office banned such dispensers of inhaled alcohol shots on the grounds of possible health risks (Saenz, 2011).
3. **Vodka tampon**, also known in Spain as 'tampodka' or 'tampax on the rocks': this consists of the application in the vagina or the anus of tampons previously soaked in alcohol, generally vodka. It produces very rapid absorption and initially avoids alcohol breath, which is why it seems to be popular among adolescents to circumvent parental control. The practice causes an increased incidence of lesions and infections in the mucous membranes. Although considered to be an urban myth (Caudevilla, 2015), cases of this have been recorded in Spain (Fonseca, 2013).
4. Another common practice among young people is to mix **alcohol with energy drinks** (high in caffeine, taurine and guarana). This mixture can lead to more alcohol being consumed due to the false sense of 'control', risks being taken while driving and alcohol dependence being favoured in the medium term (Arria et al., 2011). Because users underestimate their state of intoxication, they tend to stay up later, thereby increasing consumption and engaging in risky behaviour (Burillo-Putze, Hernández & Echeverría, 2012; Oteri, Salvo, Caputi & Calapai, 2007). Using this type of energy drink can cause anxiety, nervousness, insomnia, palpitations, and even atrial fibrillation, seizures and myocarditis (Baez-Ferrer et al., 2020; Izquierdo et al., 2012). For these reasons, the US Food and Drug Administration has initiated a process to outlaw existing caffeinated alcoholic beverages, such as the popular Four Loko, which takes its name from the four types of stimulants it uses: caffeine,

taurine, guarana and wormwood (absinthe) and has an alcohol content of 12% (O'Brien, McCoy, Rhodes, Wagoner & Wolfson, 2008; Rehm, Shield, Joharchi & Schuper, 2012). In Spain, the Jägerbomb has been very successful among young people since 2014. This is a fashionable mixture among young Spaniards, particularly at botellones (drinking in public spaces) and combines the German liqueur Jägermeister (35% alcohol) with energy drinks (mainly Red Bull). After reaching Spain as a 'cool shot', the cocktail has become very popular on social networks for some time and its notoriety is growing.

Another form of consumption that can be highlighted are alcoholic jellies or 'drunk gummy bears', basically consisting of pouring the alcoholic beverage into a container full of gummy bears (or another type of gummy bear with similar characteristics), covering it with plastic wrap and leaving it in the fridge for 24 hours. After absorbing the liquid, the gummies are ready to eat, with approximately 17 gummies equalling one drink). This formula has been so successful that its sale and distribution has been industrialized (<https://ositosconalcohol.com/>).

Another substance incorporated into leisure environments by young people looking for a 'high' is **purple drank** (also called 'lean', 'sizzurp' or 'purple syrup'), a term that refers to a mixture of 'cough syrup' (promethazine hydrochloride), soda (usually Sprite) and/or alcohol, plus Jolly Ranchers for flavour (Agnich, Stogner, Miller & Marcum, 2013; Elwood, 2001; Hart, Agnich, Stogner & Miller, 2014; Miuli et al., 2020). Users without access to promethazine syrup sometimes use another cough syrup containing codeine (Chiappini, Schifano, Corkery & Guirguis, 2021). The Spanish Agency for Medicines and Health Products (2016) recommends special attention to the use of dextromethorphan due to its adverse effects and possible hallucinogenic effects in high doses (Lessenger & Feinberg, 2008). Promethazine abuse has been linked to deafness (Blakley & Schilling, 2008) and even death (Chiappini, Schifano, Corkery & Guirguis, 2021; Hart et al., 2014).

Possibly with the aim of attracting young people, the industry has created a series of drinks in the last decade called '**alcopops**', 'designer drinks' or 'flavoured alcoholic beverages' (FABs), also known as ready-to-drink beverages (RTD). Globally, the most popular FABs are products such as Bacardi Breezer, Smirnoff Ice, Mike's Hard Lemonade, Ron Cacique Mojito and Two Dogs (Buglass, 2011; Manzoni, 2014). What really sets them apart is not so much their alcoholic content (ranging from 3.5% to 20%) but the associated innovation, design and marketing, as well as the style of presentation (packaging). Characters are used suggesting cartoons, comic strips, juvenile symbols, attractive sexual connotations, special containers that cannot remain upright alone (similar to a laboratory 'test-

tube') and need to be hand held, sweet flavours simulating children's tastes and masking the taste of alcohol, strong and sometimes luminous colours; in short, all elements that make this type of drink very attractive to young people (Buglass, 2011). Many years ago, Pascual (2002) already pointed out how young people, especially aged 14-15, were becoming familiarized with this type of drink, a process particularly noticeable among girls.

Another worrying pattern of alcohol consumption has arisen alongside binge drinking, mainly in young women: **drunkorexia** or **ebriorexia**, a term used for the first time in the *The New York Times* (Kershaw, 2008), describes the behaviour of young people who restrict the intake of foods with high caloric value in order to drink alcoholic beverages in excess. People exhibiting these behaviours generally know the energy content of alcoholic drinks and try to balance their food intake accordingly to avoid increasing their body weight. Unfortunately, maintaining this 'balance' leads them to stop eating drastically in order to drink excessively (Chambers, 2008). The usual pattern of drunkorexia includes counting the calories of the food and drink to be ingested, not eating for hours or entire days before drinking, and then increasing physical activity to burn off the excessive calories consumed (Martínez, López-Espinoza, Navarro Meza, López-Uriarte & Salazar Estrada, 2014). This seems more common among college women between the ages of 18 and 24 with body image distortion (Pietrabissa et al., 2018). Drunkorexia can have serious physical and psychological consequences (Villarino, 2012).

TOBACCO

According to ESTUDES (2021), just over 169,600 secondary school students began smoking during 2021 in Spain, more of them girls than boys (95,100 and 74,500, respectively). After alcohol, tobacco is the second most widespread drug among students aged 14-18 years. Regarding forms of consumption, 49.2% declared consuming both pack cigarettes and rolling tobacco or 'roll-your-own' (RYO) in the last 30 days, with 22.5% already using only RYO, which is almost double the 2019 figure of 14.1%. The belief among smokers that RYO represents a lower health risk, contains fewer additives and is less harmful, or the ritual involved in its preparation are the main reasons for this increase (Brown et al., 2015). Some studies, however, have found higher concentrations of nicotine, tar, and carbon monoxide (Laugesen, Epton, Frampton, Glover & Lea, 2009). Moreover, RYO smokers show a higher risk of cancers of the mouth, larynx, pharynx, and lung than smokers of conventional cigarettes (Rolke, Bakke & Gallefoss, 2009; Young et al., 2012). The false belief that RYO is less harmful to health is greater in young people, yet the contents of nicotine, tar and

carbon monoxide reach values of up to 70%, 85% and 84%, respectively, higher than permitted for conventional cigarettes (Calduch, Jiménez, San Segundo, Valle & Carlos-Roca, 2012). More nicotine means greater addictive power; more tar and carbon monoxide lead to a greater capacity to produce disease. Research has also shown that RYO users tend to be more addicted (Joseph et al., 2018) and younger than traditional cigarette smokers, as well as belonging to low-income social groups (Young et al., 2012).

At the same time, **vaping** has been normalized in recent years through **electronic cigarettes (EC)** as a substitute or complement to traditional cigarettes. Despite being presented as a safe and apparently effective means to achieve cessation of conventional cigarette smoking, they have turned into what has been called a Trojan horse, since their use exposes many adolescents to similar or even higher levels of nicotine than conventional cigarettes (Jackler & Ramamurthi, 2019). Thus, according to ESTUDES (2021), 44.3% of Spanish students between the ages of 14 and 18 have used ECs on some occasion. Consumption among men was 46.9%, and 41.7% in women. It is noteworthy that of every 10 students who have smoked tobacco on some occasion, eight of them have used ECs. The most remarkable thing, however, is that of every ten students who have never smoked tobacco, three have used ECs on some occasion. Among those having smoked ECs, only 8.5% have done so to reduce or quit smoking (with a slightly greater proportion of boys, 9.3%, than girls, 7.6%), although its effectiveness for smoking cessation is being strongly questioned (Córdoba, 2014; El Dib et al., 2017; Signes-Costa et al., 2019). Because these devices produce an aerosol from heating liquids containing solvents (glycerine, propylene glycol), one or more flavouring agents, nicotine, and sometimes cannabis derivatives (mainly THC and CBD), they have been sold as an alternative way of obtaining the effect of nicotine and THC without being exposed to the deleterious effects of the other components of a conventional cigarette or 'joint' (Budney, Sargent & Lee, 2015; Monraz-Pérez, Regalado-Pineda & Pérez-Padilla, 2015). Therefore, there is currently a false sense of security which has favoured the acceptance of CE consumption and great confidence in using them, including the consumption of cannabis derivatives; according to ESTUDES (2021) 5.3% of adolescents (6.7% boys; 3.7% girls) who have used cannabis in the last 30 days have smoked it with this mechanism. In reality, however, ECs do emit volatile carbonyls and metals (nickel, lead, chromium), many of which are toxic to the lung (Gotts, Jordt, McConnell & Tarran, 2019). With an average growth of 25% per year, the number of vapers in Spain stood at over 562,500 in 2018, producing an €88 million turnover for the sector in Spain (Upev, 2019), the market leader of which is JUULpods. In the US, the use of this EC brand is considered a 'youth epidemic'. It is presented with a

USB stick design (and is actually charged by connecting via USB to a computer or socket), into which capsules are inserted with liquid flavours which are very attractive to young people, such as mango, mint, crème brûlée, Virginia (original tobacco flavour), cucumber, etc. The liquid contains different chemicals, but the big difference to other electronic cigarettes is that it uses nicotine salts. Vaping an entire capsule (a JuulPod) is equivalent to smoking about 20 cigarettes.

CANNABIS

According to ESTUDES (2021), an estimated 155,800 students started using cannabis in 2018, with slightly more girls (83,200) than boys (72,600). The age of initiation of cannabis use is under 15 years. It is important to highlight that the damage caused is inversely proportional to the age of onset, so that it is four times higher if starting at age 15 (current average age of onset in Spain) than at age 26; it is estimated, for example, that up to 8% of the incidence of schizophrenia in the adult population of smokers could be linked to the use of cannabis in young people (Di Forti et al., 2019; Marconi, Di Forti, Lewis, Murray & Vassos, 2016). It has been shown that even occasional cannabis use can produce structural and cognitive changes in the brain of adolescents (Orr et al., 2019). It is also associated with an increased risk of suffering from behavioural disorders and psychosis, a risk which increases with greater frequency of use and greater potency of cannabis used (Di Forti et al., 2019). Without doubt, the scientific evidence regarding the risks and the organic, psychological and social consequences associated with its use are increasingly robust (Rial et al., 2018; Volkow et al., 2016; WHO, 2016).

Alongside traditional smoking and vaping, **hotboxing** stands out among the new forms of cannabis use. This consists of several consumers inhaling the smoke or aerosol of marijuana, hashish or butane hash oil (BHO) in a small, enclosed space, for example cars, very large motorcycle helmets, pantries, phone booths, tents, or closets. This can be harmful due to the accumulation of CO₂ and the increase of other toxins and the transmission of other diseases (Oelmann et al., 2006). Another practice on the rise is **'Shotgunning'**, the inhalation of illicit drug smoke which is then exhaled directly into another's mouth (Perlman et al., 1997). This is linked to greater addiction severity and riskier behaviours, with users showing little awareness of the risk of transmitting diseases via the respiratory tract (Welsh et al., 2012). Both Hotboxing and Shotgunning are forms of social use and have been associated with the transmission of infectious diseases such as tuberculosis (French et al., 2019; Oelmann et al., 2006).

Cooking/baking (cookies, cakes, brownies) is the most popular method among young people after smoking, with 1.4% ingesting THC through one of these products in

the last 30 days (2% of boys and 0.7% of girls). Because absorption is slower, effects have delayed onset (with a mean peak plasma concentration 1 to 2 hours after ingestion, in contrast to 5 to 10 minutes for peak plasma concentrations when smoked), but the intoxication lasts longer (Hazeekamp, Ware, Muller-Vahl, Abrams & Grotenhermen, 2013). Due to this delayed effect of edibles, it is possible to consume several servings in a row before the 'high' from the initial serving is felt. Consuming a large dose of THC can thus lead to a higher concentration of THC, greater intoxication and a higher risk of adverse effects (Hancock-Allen, Barker, VanDyke & Holmes, 2015).

Dabbing is a way of consuming a cannabis concentrate in the form of oil, also called 'budder', 'dab', 'shatter' or 'BHO (butane hash oil)'. Its extraction requires a very dangerous and complex process involving highly flammable chemicals such as butane gas or carbon dioxide. The resulting sticky oil, or 'dab', can reach up to 80% THC compared to 5-20% in traditional cannabis derivatives (Stogner & Miller, 2015). The 'dab' is added to the dabbing device, heated, and then nebulized into an aerosol that is inhaled deeply in a single breath and held in the lungs for several seconds (Anderson & Zechar, 2019; Raber, Elzinga & Kaplan, 2015). Due to its high THC concentration, the risks of dependence and intoxication are very high (Stephens, Patel, Angelo & Frunzi, 2020).

It is important to consider the route of administration of cannabis because the psychotropic effects after inhalation by smoking occur within minutes and last 2 to 4 hours, while the effects of oral consumption generally occur within 30 to 60 minutes and last up to 12 hours (Goldsmith et al., 2015; Monte, Zane & Heard, 2015).

Other forms of consumption known among cannabis users are: cannabis soaked in alcohol, which basically consists of obtaining an alcohol-based cannabis oil tincture, cannabis infusions, or creams or suppositories for transdermal use (Isorna, Villanueva, Veiga & Otero, 2020; Ramos, 2017).

With its street label of 'synthetic marijuana' and the confusion created in many consumers, younger users of synthetic cannabinoids (also known as 'Spice', or 'herbal incense') are more and more frequently found in addiction care. These substances are used because they can be easily and cheaply acquired, and are difficult to trace in toxicological control since they are not detected in police cannabis checks nor in ordinary urine or blood tests. They are preparations of various dry herbs smeared with synthetic cannabinoids, the vast majority of them from the JWH family (JWH-018, CP-47,497, CP-47,497-C8 and HU-210), which are smoked, although in principle no tobacco or marijuana is involved. These compounds comprise more than 100 substances with different chemical structures that have in common their action on the CB1 cannabinoid receptor but, unlike THC, a partial

agonist, they are usually full agonists and much more powerful than THC, which means psychoactive effects are more potent but of shorter duration, so redosing and overdosing are more likely (Su, Seely, Moran & Hoffman, 2015). They are advertised as natural herbs with the intention of minimizing the sense of danger (Dolengevich-Segal, Gómez-Arnau, Rodríguez-Salgado, Rabito-Alcón & Correias-Laufer, 2014). There are other Spice-type products that contain vegetable preparations, such as Zen, Skunk or K2, differing in name, labelling, and the type of cannabinoids they contain. Names and presentations are constantly evolving to evade legal control. Prices range from €9 to €12 per gram, which makes it a very cheap drug. Its psychoactive effects are similar to those of cannabis, but with more adverse effects since they can act on other receptors, and kidney, heart, digestive and neurological problems have been described which do not occur with cannabis (Tung, Chiang & Lam, 2012). Some cases of toxic schizophreniform psychosis have been described (Müller et al., 2010), and there is talk in user forums of transient psychotic symptoms, although the influence of this substance on sustained psychotic symptoms has also recently been reported (Durand, Delgado, Parra-Pellot & Nichols-Vinueza, 2015; Papanti et al., 2013). Exacerbation of psychoses, induced psychoses and persistent psychoses have been described with these substances, giving rise to the proposed term ‘spiceophrenia’ (Papanti et al., 2013).

Waterpipe smoking, a very harmful new trend

According to the EMCDDA (2020), slightly more than 47% of students have smoked tobacco using waterpipes, with no significant gender differences being observed. This practice is considered to be a new threat in the global fight against tobacco and its consequences (Maziak et al., 2015; WHO Study Group on Tobacco Product Regulation, 2015). Similarly, with regard to how cannabis is used, the joint or spliff is the most widespread form (91.4% of student users), followed by ‘waterpipes’ ‘hookahs’ or ‘shishas’ (10.3% of users, of which boys 14.3%, girls 5.8%) (PNSD, 2021). The rise in the number of users is based on a series of myths such as that smoking a waterpipe is healthier because the smoke is believed to cool before entering the lungs, that the water that is part of the mechanism that filters the toxic substances in tobacco, that waterpipe smoke is less irritating to the throat and respiratory tract, or that fruit-flavoured tobacco is less harmful, beliefs that are false. In addition to tobacco smoke, waterpipe smokers inhale the smoke from the charcoal tablets used to light the tobacco, thereby inhaling the gas produced by the combustion of coal, which contains heavy metals that pose a significant health risk (Pratiti & Mukherjee, 2019).

With several people sharing a pipe, waterpipe smoking is an eminently social practice, i.e., everyone inhales

through the same mouthpiece that passes from mouth to mouth, thereby representing a source of infectious disease transmission (Sterling & Mermelstein, 2011). In addition, more and more adolescents and young people are mixing tobacco with cannabis derivatives (marijuana and/or hashish) and substituting water with alcoholic beverages, thus undoubtedly making this practice even more dangerous.

While the water filter may lead smokers to believe that waterpipe smoking is harmless or less harmful than direct cigarette or joint smoking, the smoke thus inhaled contains, in addition to nicotine and THC, toxic compounds such as carbon monoxide, formaldehyde, polycyclic aromatic hydrocarbons, arsenic and lead (Albisser, Schmidlin, Schindler, Tamm & Stolz, 2013). Risks are therefore multiplied exponentially, since, in addition to the known risks of tobacco and cannabis, other new derivatives of coal burning are incorporated. Primack et al. (2016) compared smoking tobacco in a waterpipe session with smoking a single cigarette and showed that waterpipe use meant inhaling 56 times more smoke, 25 times more tar, 2.5 times more nicotine and 10 times more carbon monoxide. Some experts have calculated that a single waterpipe session amounts to smoking between 25 and 50 cigarettes (Cobb, Schihadeh, Weaver & Eissenberg, 2011).

We must emphasize that waterpipe tobacco smoking is on the increase and affects the youngest above all. Permissive social attitudes favour its use among adolescents, and this is undoubtedly a factor in initiating the smoking of cigarettes and perhaps other substances such as cannabis and its derivatives.

From hypnosedatives (with or without a prescription) to pharming

In clinical toxicology, ‘pharming’ is the misuse of prescription drugs for ‘recreational’ purposes, generally by someone other than the patient for whom they were prescribed, and with a dose other than indicated as therapeutic, to seek some of their psychoactive effects (Burillo-Putze et al., 2013). While this is a widespread phenomenon among adolescents and young people in the United States, the practice in recreational and nightlife contexts is also increasing in Europe (United Nations Office on Drugs and Crime, 2011). There are few data on the phenomenon of ‘pharming’ in Spain, where it began to be studied in the form of tranquilizer and sleeping pill use with or without a prescription in the 2005 EDADES survey. Between 2005 and 2018, there was a significant increase in the prevalence of lifetime use, from 5.1% in 2005 to 19.6% in 2018 (ESTUDES, 2021). This type of substance use is more widespread among girls.

Being perceived as safe without the supervision of a health professional, ‘pharming’ has become a common

practice among young people (Schifano & Chiappini, 2018), with a series of factors influencing its growing popularity: the drugs are easily accessible both in the home medicine cabinet and through direct prescription-free acquisition in pharmacies or through the Internet (Burillo-Putze et al., 2013); the substances are legal and the perception is that, being medicines, they are safe products and much less dangerous than street drugs; parents or other relatives or acquaintances do not perceive their use to be a type of drug use. In addition to the inherent danger of abusive consumption itself, the risk is increased when several drugs are used together, often mixed with alcohol or other drugs (Burillo-Putze et al., 2012). As an example, the so-called 'trail mix' has been observed among young Americans. In this group phenomenon, each participant brings a collection of drugs from their home medicine cabinet; the drugs are then all mixed in a container for random consumption (Prosser & Nelson, 2012). Another aspect to take into account with pharming is the possibility that it serves as a gateway to the consumption of other illegal drugs, as is the case with 'cheese', a mixture of heroin and anti-flu medicine (mainly diphenhydramine and acetaminophen), which causes euphoria and hallucinations on inhalation and has become known as 'starter heroin' (Maxwell, Coleman, Feng, Goto & Tirado, 2012). Resources and suggestions for possible substance combinations to increase the euphoric effect of loperamide are also easily accessible on the internet (e.g., <http://www.bluelight.ru>; <http://www.drugs-forum.com>).

The European Medicines Agency (Schifano & Chiappini, 2018) has observed an increase in recent years both in the prescription and in the availability of second-generation antipsychotics (SGA) such as quetiapine. Another example is **loperamide**, which when used at low doses is a potent mu-opioid receptor agonist and when consumed in large quantities (more than 50 mg) produces euphoric effects, central nervous system depression, possibly stronger initial euphoria followed by CNS depression and cardiotoxicity (Eggleston, Clark & Marraffa, 2017; Schifano & Chiappini, 2018). It is also known as 'poor man's methadone' (Stanciu & Gnanasegaram, 2017).

Finally, consideration of the phenomenon of 'pharming', should not only focus on its use in leisure or recreational spaces, but should also take into account the use of medications to sleep or rest, and also to stay awake, among those people who have to work at night or study during exam times or to combat the effect of medications or drugs that prevent them from falling asleep (Alfaro & Hernández, 2019; Bennett & Holloway, 2017).

Conclusions

The data presented by the PNSD and the EMCDDA reveal how widespread drug use is in today's society,

reflecting a change both in the substances themselves and in their patterns of use and even in the epidemiological profile of consumers. This implies the need to update knowledge on how to approach possible medical and psychopathological complications. We find ourselves up against a new, changing panorama and with scarce empirical data, which is a challenge for professionals dealing with these new forms of drug use and their consequences. New substances and hitherto unknown channels of access, sale and distribution of drugs call into question current methods of surveillance, detection and prevention. The anonymity offered by the internet, the simplicity of online ordering, the low prices and, occasionally, the absence of a legal framework, broaden their use among the youngest.

The use of drugs and new forms of use is a major problem affecting the personal, work and family life of many people and leads to another type of consumption that, until recently, was scarcely valued: that of health system resources. As Nogué, Amigó and Galicia (2014) suggest, substance use is no longer an individual problem; it is by rights something that affects all of society. Drug users should be aware that their final destination may be an emergency service or, on other occasions, a Medico-Legal Institute.

Conflict of interests

The authors declare that they have no conflict of interests and received no funding for the preparation of this article.

References

- Adán, C. (2018). Pulseras de colores para controlar que no se venda alcohol a menores. *Heraldo*. Retrieved at <https://www.heraldo.es/noticias/aragon/2016/12/31/pulseras-colores-para-controlar-que-venda-alcohol-menores-los-cotillones-1151079-300.html>.
- Agencia Española del Medicamento y Productos Sanitarios (2016). Boletín mensual de la AEMPS sobre medicamentos de uso humano. Septiembre de 2016. Retrieved at <https://www.aemps.gob.es/informa/boletines-AEMPS/boletinMensual/2016/septiembre/boletin-septiembre.htm>.
- Agnich, L. E., Stogner, J. M., Miller, B. L. & Marcum, C. D. (2013). Purple drank prevalence and characteristics of misusers of codeine cough syrup mixtures. *Addictive Behaviors*, 38, 2445-2449. doi:10.1016/j.addbeh.2013.03.020.
- Albisser, S., Schmidlin, J., Schindler, C., Tamm, M. & Stolz, D. (2013). Water pipe smoking and its association with cigarette and cannabis use in young adults in Switzerland. *Respiration*, 86, 210-215. doi:10.1159/000342894.

- Alfaro, F. A. & Hernández, N. (2019). Uso recreativo de benzodicepinas en la población joven. *Revista Ene De Enfermería*, 13, 1-19.
- Anderson, R. P. & Zechar, K. (2019). Lung injury from inhaling butane hash oil mimics pneumonia. *Respiratory Medicine Case Reports*, 26, 171-173. doi:10.1016/j.rmcr.2019.01.002.
- Arria, A., Caldeira, K., Kasperski, S. J., Vincent, K. B., Griffiths, R. R. & O'Grady, K. E. (2011). Energy drink consumption and increased risk for alcohol dependence. *Alcoholism: Clinical and Experimental Research*, 35, 365-375. doi:10.1111/j.1530-0277.2010.01352.x.
- Báez-Ferrer, N., Parra-Esquível, P. C., Gálvez-Rodríguez, M., Burillo-Putze, G., Abreu-González, P. & Domínguez-Rodríguez, A. (2020). Miocarditis relacionada con el uso de bebidas energéticas: A propósito de un caso. *Emergencias*, 32.
- Bennett, T. & Holloway, K. (2017). Motives for illicit prescription drug use among university students: A systematic review and meta-analysis. *International Journal of Drug Policy*, 44, 12-22. doi:10.1016/j.drugpo.2017.02.012.
- Bersani, S., Corazza, O., Albano, G., Bruschi, S., Minichino, A., Vicinanza, R.,... Schifano, F. (2015). The "Eyeballing" technique: An emerging and alerting trend of alcohol misuse. *European Review for Medical and Pharmacological Sciences*, 19, 2311-2317.
- Blakley, B. W. & Schilling, H. (2008). Deafness associated with acetaminophen and codeine abuse. *Journal of Otolaryngology-Head & Neck Surgery*, 37.
- Brown, A. K., Nagelhout, G. E., van den Putte, B., Willemssen, M. C., Mons, U., Guignard, R. & Thompson, M. E. (2015). Trends and socioeconomic differences in roll-your-own tobacco use: Findings from the ITC Europe Surveys. *Tobacco Control*, 24 (Supl. 3), 11-16. doi:10.1136/tobaccocontrol-2014-051986.
- Budney, A. J., Sargent, J. D. & Lee, D. C. (2015). Vaping cannabis (marijuana): Parallel concerns to e-cigs? *Addiction*, 110, 1699-1704. doi:10.1111/add.13036.
- Buglass, A. J. (2011). *Handbook of alcoholic beverages: Technical, analytical and nutritional aspects*. John Wiley & Sons Ltd.
- Burillo-Putze, G., Aldea-Perona, A., Rodríguez-Jiménez, C., García-Saiz, M., Climent, B., Dueñas, A.,... Hoffman, R. S. (2013). Drogas emergentes (II): El pharming. *Anales Del Sistema Sanitario De Navarra*, 36, 99-114. doi:10.4321/S1137-66272013000100010.
- Burillo-Putze, G., Hernández, M.J. & Echeverría, P. (2012). New ways of consuming alcohol. *Anales de Pediatría*, 77, 419-420. doi:10.1016/j.anpedi.2012.03.017.
- Calduch, T. C., Jiménez, C. H., San Segundo, T., Valle, M. & Carlos-Roca, A. P. (2012). Tabaco de liar: Una prioridad de salud pública y consumo. *Gaceta Sanitaria*, 26, 267-269. doi:10.1016/j.gaceta.2011.09.010.
- Caudevilla, F. (2015). Pedro, el Lobo y las drogas de verano. *Pediatría Atención Primaria*, 17, 203-204. doi:10.4321/S1139-76322015000400001.
- Chambers, R. A. (2008). Drunkorexia. *Journal of Dual Diagnosis*, 4, 414-416. doi:10.1080/15504260802086677.
- Chiappini, S., Schifano, F., Corkery, J. M. & Guirguis, A. (2021). Beyond the 'purple drank': Study of promethazine abuse according to the European Medicines Agency adverse drug reaction reports. *Journal of Psychopharmacology*, 35, 681-692. doi:10.1177/0269881120959615.
- Cobb, C. O., Shihadeh, A., Weaver, M. F. & Eissenberg, T. (2011). Waterpipe tobacco smoking and cigarette smoking: A direct comparison of toxicant exposure and subjective effects. *Nicotine & Tobacco Research*, 13, 78-87. doi:10.1093/ntr/ntq212.
- Córdoba, R. (2014). El desafío de los cigarrillos electrónicos. *Atención Primaria*, 46, 307-312. doi:10.1016/j.aprim.2014.01.002.
- Di Forti, M., Quattrone, D., Freeman, T. P., Tripoli, G., Gayer-Anderson, C., Quigley, H.,... La Cascia, C. (2019). The contribution of cannabis use to variation in the incidence of psychotic disorder across Europe (EU-GEI): A multicentre case-control study. *The Lancet Psychiatry*, 6, 427-436. doi:10.1016/S2215-0366(19)30048-3.
- Dolengevich-Segal, H., Gómez-Arnau, J., Rodríguez-Salgado, B., Rabito-Alcón, M. F. & Correias-Laufer, J. (2014). Panorama actual en el uso de drogas emergentes. *Salud y Drogas*, 14, 47-58.
- Durand, D., Delgado, L. L., Parra-Pellot, D. M. de la. & Nichols-Vinueza, D. (2015). Psychosis and severe rhabdomyolysis associated with synthetic cannabinoid use: A case report. *Clinical Schizophrenia & Related Psychoses*, 8, 205-208.
- Eggleston, W., Clark, K. H. & Marraffa, J. M. (2017). Loperamide abuse associated with cardiac dysrhythmia and death. *Annals of Emergency Medicine*, 69, 83-86. doi:10.1016/j.annemergmed.2016.03.047.
- El Dib, R., Suzumura, E. A., Akl, E. A., Gomaa, H., Agarwal, A., Chang, Y.,... Maziak, W. (2017). Electronic nicotine delivery systems and/or electronic non-nicotine delivery systems for tobacco smoking cessation or reduction: A systematic review and meta-analysis. *BMJ Open*, 7, e012680. doi:10.1136/bmjopen-2016-012680.
- Elwood, W. N. (2001). Sticky business: Patterns of procurement and misuse of prescription cough syrup in Houston. *Journal of Psychoactive Drugs*, 33, 121-133. doi:10.1080/02791072.2001.10400477.
- European Monitoring Centre for Drugs and Drug Addiction (2019). *Informe Europeo sobre Drogas. Tendencias y novedades 2019*. Lisboa: Observatorio Europeo de las Drogas y las Toxicomanías. Retrieved at https://www.emcdda.europa.eu/system/files/publications/11364/20191724_TDAT19001ESN_PDF.pdf.

- European School Survey Project on Alcohol and Other Drugs (2019). ESPAD report 2019. Retrieved at https://pnsd.sanidad.gob.es/profesionales/sistemasInformacion/sistemaInformacion/pdf/20201112_Informe_ESPAD_2019_final.pdf.
- Fonseca, L. (2013). Detectados cuatro casos en Asturias de chicas intoxicadas por tampones con vodka. *El Comercio*. Retrieved at <https://www.elcomercio.es/v/20130521/gijon/gijon-registro-tres-casos-20130521.html>.
- French, C. E., Coope, C. M., McGuinness, L. A., Beck, C. R., Newitt, S., Ahyow, L.,... Oliver, I. (2019). Cannabis use and the risk of tuberculosis: A systematic review. *BMC Public Health*, 19, 1-13. doi:10.1186/s12889-019-7127-0.
- Goldsmith, R. S., Targino, M. C., Fanciullo, G. J., Martin, D. W., Hartenbaum, N. P., White, J. M. & Franklin, P. (2015). Medical marijuana in the workplace: Challenges and management options for occupational physicians. *Journal of Occupational and Environmental Medicine*, 57, 518. doi:10.1097/JOM.0000000000000454.
- Gotts, J. E., Jordt, S. E., McConnell, R. & Tarran, R. (2019). What are the respiratory effects of e-cigarettes? *BMJ*, 366. doi:10.1136/bmj.l5275.
- Hancock-Allen, J. B., Barker, L., VanDyke, M. & Holmes, D. B. (2015). Death following ingestion of an edible marijuana product—Colorado, March 2014. *MMWR. Morbidity and Mortality Weekly Report*, 64, 771. doi:10.15585/mmwr.mm6428a6.
- Hart, M., Agnich, L. E., Stogner, J. & Miller, B. L. (2014). 'Me and my drank': Exploring the relationship between musical preferences and purple drank experimentation. *American Journal of Criminal Justice*, 39, 172-186. doi:10.1007/s12103-013-9213-7.
- Hazekamp, A., Ware, M. A., Muller-Vahl, K. R., Abrams, D. & Grotenhermen, F. (2013). The medicinal use of cannabis and cannabinoids—an international cross-sectional survey on administration forms. *Journal of Psychoactive Drugs*, 45, 199-210. doi:10.1080/02791072.2013.805976.
- Isorna, M., Villanueva, V., Veiga, S. & Otero, M. (2020). Formas de consumo del cannabis: Características, riesgos y daños asociados. In M. Isorna, A. Rial & V. Villanueva (Eds.), *Cannabis: Evidencia científica vs controversia social* (pp. 59-101). Dykinson, S.L.
- Izquierdo Fos, I., Vázquez Gomis, R. M., Vázquez Gomis, C., Piernas, R., Climent Forner, E.,... Vargas Torcal, F. (2012). Episodio de fibrilación auricular tras ingesta de bebida energética y práctica de deporte. *Anales de Pediatría*, 77, 417-419. doi:10.1016/j.anpedi.2012.05.006.
- Jackler, R. K. & Ramamurthi, D. (2019). Nicotine arms race: JUUL and the high-nicotine product market. *Tobacco Control*, 28, 623-628. doi:10.1136/tobaccocontrol-2018-054796.
- Joseph, S., Krebs, N. M., Zhu, J., Wert, Y., Goel, R., Reilly, S. M.,... Cheriath, P. (2018). Differences in nicotine dependence, smoke exposure and consumer characteristics between smokers of machine-injected roll-your-own cigarettes and factory-made cigarettes. *Drug and Alcohol Dependence*, 187, 109-115. doi:10.1016/j.drugalcdep.2018.01.039.
- Kershaw, S. (2008). Starving themselves, cocktail in hand. *The New York Times*. Retrieved at <https://www.nytimes.com/2008/03/02/fashion/02drunk.html>.
- Laugesen, M., Epton, M., Frampton, C. M., Glover, M. & Lea, R. A. (2009). Hand-rolled cigarette smoking patterns compared with factory-made cigarette smoking in New Zealand men. *BMC Public Health*, 9, 1-6. doi:10.1186/1471-2458-9-194.
- Lessenger, J. E. & Feinberg, S. D. (2008). Abuse of prescription and over-the-counter medications. *The Journal of the American Board of Family Medicine*, 21, 45-54. doi:10.3122/jabfm.2008.01.070071.
- Manzoni, C. (2014). Más y más litros: Las bebidas alcohólicas "listas para tomar" ya son furor en el país. *La Nación*. Retrieved at <https://www.lanacion.com.ar/economia/mas-y-mas-litros-las-bebidas-alcoholicas-listas-para-tomar-ya-son-furor-en-el-pais-nid1728936/>.
- Marconi, A., Di Forti, M., Lewis, C. M., Murray, R. M. & Vassos, E. (2016). Meta-analysis of the association between the level of cannabis use and risk of psychosis. *Schizophrenia Bulletin*, 42, 1262-1269. doi:10.1093/schbul/sbw003.
- Martínez, A. G., López-Espinoza, A., Navarro Meza, M., López-Uriarte, P. & Salazar Estrada, J. G. (2014). Trastornos de la conducta de beber: Una propuesta de investigación. *Revista Mexicana De Trastornos Alimentarios*, 5, 58-69.
- Maxwell, J. C., Coleman, J. J., Feng, S., Goto, C. S. & Tirado, C. F. (2012). Cheese: An old drug in a new wrapper. *Drug and Alcohol Dependence*, 126, 161-167. doi:10.1016/j.drugalcdep.2012.05.015.
- Maziak, W., Taleb, Z. B., Bahelah, R., Islam, F., Jaber, R., Auf, R. & Salloum, R. G. (2015). The global epidemiology of waterpipe smoking. *Tobacco Control*, 24 (Supl. 1), 3-12. doi:10.1136/tobaccocontrol-2014-051903.
- Miuli, A., Stigliano, G., Lalli, A., Coladonato, M., D'Angelo, L., Esposito, F.,... Schifano, F. (2020). "Purple drank" (codeine and promethazine cough syrup): A systematic review of a social phenomenon with medical implications. *Journal of Psychoactive Drugs*, 52, 453-462. doi:10.1080/02791072.2020.1797250.
- Monraz-Pérez, S., Regalado-Pineda, J. & Pérez-Padilla, R. (2015). El cigarrillo electrónico: Peligro u oportunidad. *Neumología Y Cirugía De Tórax*, 74, 82-86.
- Monte, A. A., Zane, R. D. & Heard, K. J. (2015). The implications of marijuana legalization in Colorado. *Jama*, 313, 241-242. doi:10.1001/jama.2014.17057.
- Müller, H., Sperling, W., Köhrmann, M., Huttner, H. B., Kornhuber, J. & Maler, J. (2010). The synthetic

- cannabinoid Spice as a trigger for an acute exacerbation of cannabis induced recurrent psychotic episodes. *Schizophrenia Research*, 118, 309-310. doi:10.1016/j.schres.2009.12.001.
- Nogué, S., Amigó, M. & Galicia, M. (2014). Raves, consumo de drogas y asistencia en urgencias. *Adicciones*, 26, 189-190.
- O'Brien, M. C., McCoy, T. P., Rhodes, S. D., Wagoner, A. & Wolfson, M. (2008). Caffeinated cocktails: Energy drink consumption, high-risk drinking, and alcohol-related consequences among college students. *Academic Emergency Medicine*, 15, 453-460. doi:10.1111/j.1553-2712.2008.00085.x.
- Observatorio Español de Drogodependencias y toxicomanías (2020). *Encuesta sobre el uso de drogas en enseñanzas secundarias en España (ESTUDES)*. Madrid: Ministerio de Sanidad. Delegación del gobierno para el plan nacional sobre drogas. Retrieved at https://pnsd.sanidad.gob.es/profesionales/sistemasInformacion/sistemaInformacion/pdf/ESTUDES_2020_Informe.pdf.
- Oeltmann, J. E., Oren, E., Haddad, M. B., Lake, L. K., Harrington, T. A., Ijaz, K. & Narita, M. (2006). Tuberculosis outbreak in marijuana users, Seattle, Washington, 2004. *Emerging Infectious Diseases*, 12, 1156. doi:10.3201/eid1207.051436.
- Orr, C., Spechler, P., Cao, Z., Albaugh, M., Chaarani, B., Mackey, S.,... Bokde, A. L. (2019). Grey matter volume differences associated with extremely low levels of cannabis use in adolescence. *Journal of Neuroscience*, 39, 1817-1827. doi:10.1523/JNEUROSCI.3375-17.2018.
- Oteri, A., Salvo, F., Caputi, A. P. & Calapai, G. (2007). Intake of energy drinks in association with alcoholic beverages in a cohort of students of the School of Medicine of the University of Messina. *Alcoholism: Clinical and Experimental Research*, 31, 1677-1680. doi:10.1111/j.1530-0277.2007.00464.
- Papanti, D., Schifano, F., Botteon, G., Bertossi, F., Mannix, J., Vidoni, D.,... Bonavigo, T. (2013). "Spicephrenia": A systematic overview of "Spice"-related psychopathological issues and a case report. *Human Psychopharmacology: Clinical and Experimental*, 28, 379-389. doi:10.1002/hup.2312.
- Pascual, F. (2002). Percepción del alcohol entre los jóvenes. *Adicciones*, 14, 123-131. doi:10.20882/adicciones.522.
- Perlman, D. C., Perkins, M. P., Paone, D., Kochems, L., Salomon, N., Friedmann, P. & Des Jarlais, D. C. (1997). "Shotgunning" as an illicit drug smoking practice. *Journal of Substance Abuse Treatment*, 14, 3-9. doi:10.1016/S0740-5472(96)00182-1.
- Pietrabissa, G., Rossi, A., Gaudenzi, M., Bertuzzi, V., Tagliagambe, A., Volpi, C.,... Castelnovo, G. (2018). Drunkorexia: Empirical investigation and analysis of the characteristics of the phenomenon in an Italian sample of adolescents and young adults. *Psychology, Society, & Education*, 10, 285-299. doi:10.25115/psye.v10i3.2135.
- Plan Nacional sobre Drogas. (2021). *ESTUDES 2021. Encuesta sobre uso de drogas en enseñanzas secundarias en España, 1994-2021*. Madrid: Ministerio de Sanidad. Retrieved at https://pnsd.sanidad.gob.es/profesionales/sistemasInformacion/sistemaInformacion/pdf/ESTUDES_2021_Informe_de_Resultados.pdf.
- Pratiti, R. & Mukherjee, D. (2019). Epidemiology and adverse consequences of hookah/waterpipe use: A systematic review. *Cardiovascular & Hematological Agents in Medicinal Chemistry (Formerly Current Medicinal Chemistry-Cardiovascular & Hematological Agents)*, 17, 82-93. doi:10.2174/1871525717666190904151856.
- Primack, B. A., Carroll, M. V., Weiss, P. M., Shihadeh, A. L., Shensa, A., Farley, S. T.,... Nayak, S. (2016). Systematic review and meta-analysis of inhaled toxicants from waterpipe and cigarette smoking. *Public Health Reports*, 131, 76-85.
- Prosser, J. M. & Nelson, L. S. (2012). The toxicology of bath salts: A review of synthetic cathinones. *Journal of Medical Toxicology*, 8, 33-42. doi:10.1007/s13181-011-0193-z.
- Raber, J. C., Elzinga, S. & Kaplan, C. (2015). Understanding dabs: Contamination concerns of cannabis concentrates and cannabinoid transfer during the act of dabbing. *The Journal of Toxicological Sciences*, 40, 797-803. doi:10.2131/jts.40.797.
- Ramos, J. (2017). *Efectos terapéuticos de los cannabinoides*. Instituto universitario de Investigación en Neuroquímica de la Universidad Complutense de Madrid.
- Rehm, J., Shield, K. D., Joharchi, N. & Shuper, P. A. (2012). Alcohol consumption and the intention to engage in unprotected sex: Systematic review and meta-analysis of experimental studies. *Addiction*, 107, 51-59. doi:10.1111/j.1360-0443.2011.03621.x.
- Rial, A., Burkhart, G., Isorna, M., Barreiro, C., Varela, J. & Golpe, S. (2018). Consumo de cannabis entre adolescentes: Patrón de riesgo, implicaciones y posibles variables explicativas. *Adicciones*, 31, 64-77. doi:10.20882/adicciones.1212.
- Rial, A., Golpe, S., Barreiro, C., Gómez, P. & Isorna, M. (2020). La edad de inicio en el consumo de alcohol en adolescentes: Implicaciones y variables asociadas. *Adicciones*, 32, 52-62. doi:10.20882/adicciones.1266.
- Rolke, H. B., Bakke, P. S. & Gallefoss, F. (2009). Relationships between hand-rolled cigarettes and primary lung cancer: A Norwegian experience. *The Clinical Respiratory Journal*, 3, 152-160. doi:10.1111/j.1752-699X.2008.00125.x.
- Saenz, H. (2011). Baleares pone fin a los "chupitos de la risa". *El Mundo*. Retrieved at <https://www.elmundo.es/elmundo/2011/08/24/baleares/1314195899.html>.
- Schifano, F. & Chiappini, S. (2018). Is there such a thing as a 'loper' dope? Analysis of loperamide-related European Medicines Agency (EMA) pharmacovigilance

- database reports. *PLoS One*, 13. doi:10.1371/journal.pone.0204443.
- Signes-Costa, J., de Granda-Orive, J. I., Pinedo, Á R., Escrig, A. C., de Higes Martínez, E.,... Jiménez-Ruiz, C. A. (2019). Declaración Oficial de la Sociedad Española de Neumología y Cirugía Torácica (SEPAR) sobre cigarrillos electrónicos e IQOS®. *Archivos De Bronconeumología*, 55, 581-586. doi:10.1016/j.arbres.2019.04.023.
- Stanciu, C. N. & Gnanasegaram, S. A. (2017). Loperamide, the “poor man’s methadone”: Brief review. *Journal of Psychoactive Drugs*, 49, 18-21. doi:10.1080/02791072.2016.1260188.
- Stephens, D., Patel, J. K., Angelo, D. & Frunzi, J. (2020). Cannabis butane hash oil dabbing induced lung injury mimicking atypical pneumonia. *Cureus*, 12. doi:10.7759/cureus.7033.
- Sterling, K. L. & Mermelstein, R. (2011). Examining hookah smoking among a cohort of adolescent ever smokers. *Nicotine & Tobacco Research*, 13, 1202-1209. doi:10.1093/ntr/ntr146.
- Stogner, J. M. & Miller, B. L. (2015). The dabbing dilemma: A call for research on butane hash oil and other alternate forms of cannabis use. *Substance Abuse*, 36, 393-395. doi:10.1080/08897077.2015.1071724.
- Su, M. K., Seely, K. A., Moran, J. H. & Hoffman, R. S. (2015). Metabolism of classical cannabinoids and the synthetic cannabinoid JWH-018. *Clinical Pharmacology & Therapeutics*, 97, 562-564. doi:10.1002/cpt.114.
- Torres, F. (2020). *Analizamos el estado de salud de los festivales españoles*. Retrieved at <https://wololosound.com/articulos/informe-festivales-espanoles/>.
- Tung, C. K., Chiang, T. P. & Lam, M. (2012). Acute mental disturbance caused by synthetic cannabinoid: A potential emerging substance of abuse in Hong Kong. *East Asian Archives of Psychiatry*, 22, 31-33. doi:10.3316/informit.870000302755965.
- United Nations Office on Drugs and Crime (2011). *The non-medical use of prescription drugs. Policy direction issues*. Viena: United Nations. Retrieved at <https://www.unodc.org/documents/drug-prevention-and-treatment/nonmedical-use-prescription-drugs.pdf>.
- Upev (2019). *El cigarrillo electrónico duplica su negocio en España*. Retrieved at <https://upev.org/resumen-2019-junio-semana-4/>.
- Villarino, A. (2012). Trastornos de la conducta alimentaria. No todo es anorexia y bulimia. *Controversias Sobre Los Trastornos Alimentarios*, 33-46.
- Volkow, N. D., Swanson, J. M., Evins, A. E., DeLisi, L. E., Meier, M. H., González, R.,... Baler, R. (2016). Effects of cannabis use on human behavior, including cognition, motivation, and psychosis: A review. *JAMA Psychiatry*, 73, 292-297. doi:10.1073/pnas.1411228111.
- Welsh, C., Goldberg, R., Tapscott, S., Medoff, D., Rosenberg, S. & Dixon, L. (2012). “Shotgunning” in a population of patients with severe mental illness and comorbid substance use disorders. *The American Journal on Addictions*, 21, 120-125. doi:10.1111/j.1521-0391.2011.00201.x.
- WHO. Study Group on Tobacco Product Regulation (2015). Advisory note: Waterpipe tobacco smoking: Health effects, research needs and recommended actions for regulators. Retrieved at https://apps.who.int/iris/bitstream/handle/10665/161991/9789241508469_eng.pdf.
- World Health Organization (2016). *Health and Social Effects of Nonmedical Cannabis Use (The)*. World Health Organization. Retrieved at <https://www.who.int/publications/i/item/9789241510240>.
- Young, D., Yong, H., Borland, R., Shahab, L., Hammond, D., Cummings, K. M. & Wilson, N. (2012). Trends in roll-your-own smoking: Findings from the ITC Four-Country Survey (2002–2008). *Journal of Environmental and Public Health*, 2012. doi:10.1155/2012/406283.